

**MIDDLESBROUGH COUNCIL  
OVERVIEW AND SCRUTINY BOARD**

**20 FEBRUARY 2018**

**FINAL REPORT OF THE ECONOMIC  
DEVELOPMENT AND INFRASTRUCTRE  
SCRUTINY PANEL – LED LIGHTING**

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## **AIM OF THE INVESTIGATION**

1. The aim of the investigation was to examine the implementation of the LED lighting scheme in Middlesbrough and ascertain whether the replacement LED lighting was in the best interests of Middlesbrough residents.

## **TERMS OF REFERENCE**

2. The terms of reference for the scrutiny panel's investigation were as follows:
  - a) To consider progress made to date with Middlesbrough's LED replacement lighting scheme.
  - b) To examine the existing budget provision and actual and projected savings.
  - c) To assess the potential impact of the new lighting with regard to community safety.

## **INFORMATION REQUESTED**

3. Prior to the Panel meeting, information was requested from the Service Area on the following items:
  - Overview and background of the LED lighting scheme.
  - Update of the current position with regard to implementation.
  - Total cost for the scheme.
  - Projected/Actual savings.
  - Community safety issues (if any).
  - Complaints/Faults/One Stop requests.
  - Any other relevant information.

## **BACKGROUND INFORMATION**

4. The proposal to implement the replacement LED lighting project was made in 2014 by the Head of Service in response to a Central Government directive for all Local Authorities to reduce energy usage. A cost benefit analysis was undertaken at the time which fed into the Invest to Save Programme.
5. The project is intended to replace all existing street lighting units with LED lamps at a total cost of £7.5 million for approximately 22,000 units of varying types. Other lighting such as for signs, subways and bollards is not part of the project.
6. Public lighting is a part of Middlesbrough Council's sustainable transport policy, helping to increase and ensure the safe use of highways during darkness. The provision and maintenance of good quality public lighting gives highway users more confidence and improves the sense of personal safety and security.<sup>1</sup>

<sup>1</sup> Street Lighting Maintenance, Management Plan (Including Telematics) (Middlesbrough Council)

7. Whilst there is no legal obligation for highway authorities to provide street lighting, Section 97 of the Highway Act 1980 provides powers to highway authorities in this respect. The main requirement is to provide a sustainable and appropriate level of lighting to the road network. Highway lighting is designed to light the carriageway/pathway and any additional benefits are secondary. Some benefits of street lighting include: reducing road traffic collisions, increasing safety to all road users and reducing the fear of crime and actual crime.
8. Light Emitting Diode (LED) lighting products light approximately 90% more efficiently than incandescent light bulbs, as well as reducing light and air pollution. An electrical current passes through a microchip which illuminates the tiny light sources called LEDs and the result is visible light. LEDs typically do not “burn out” or fail. Instead they experience “lumen depreciation” wherein the brightness of the LED dims slowly over time. LED is a highly energy efficient lighting technology.<sup>2</sup> LED lighting is more direct and the light is whiter and brighter than traditional street lanterns.
9. Middlesbrough Council’s energy consumption for street lighting continues to rise with the increase in new housing developments. Energy costs are also increasing at a rate of approximately 5% per year which equates to a significant increase of £1.2 million.
10. With the aims of reducing energy consumption and carbon emissions, producing lower maintenance requirements and achieving significant cost savings, Middlesbrough Council implemented a £5 million lamp unit replacement programme, with an anticipated annual saving of over £440,000. Phase 1 of Middlesbrough Council’s “Invest To Save” LED Replacement Programme is now complete.
11. An OJEU tendering process was initiated in January 2013 to procure a Partnering Contract for Street Lighting and illuminated signs maintenance and installation, 2014-2026. The Contract commenced on 1 June 2014 and includes for any Capital expenditure programmes. The Phase 1 LED replacement project was approved on 20 January 2015 and delivery, in line with the recently awarded Contract, was provided by the Councils Partnering Contractor, Galliford Try.
12. In partnership with Galliford Try, 13,251 existing lamp units have been replaced with LEDs over a twenty four month period. This equates to approximately 70% of all light fittings provided by Middlesbrough Council.
13. An initial bid of £7.5 million was submitted to complete the project. Following the bidding process, funding of £5 million was awarded from the Council’s Invest to Save Programme. The reduced amount of funding meant that only 70% of the project could be completed in the first phase rather than the whole 100%.
14. The £5 million investment required for Phase 1 has been procured via loans which will be paid back over a period of 12 years.
15. Phase 1 of the project is designed to reduce energy usage as much as possible and as quickly as possible. The Contractor held regular meetings with the Council and Neighbourhood Safety Teams to agree which areas would be included in Phase 1 of the

<sup>2</sup> [www.energystar.gov](http://www.energystar.gov)

scheme. Areas with slightly higher incidence of the crime and anti-social behaviour were selected initially. The required savings are also considered in terms of some areas that have been over lit in previous years. Some lamps can be reduced by two classes, thus saving energy costs but still maintaining British Standards.

16. The replacement programme has been delivered within budget although the project over-ran by three months on the anticipated delivery programme. Based on current energy prices and taking into account inflation, £438,687 ongoing annual savings have been achieved including carbon tax and maintenance savings. In terms of energy, the annual saving is 3,203,245 KW/h. Without the replacement scheme the anticipated energy bill would have risen by £64,570, based on consumption in 2014/2015.
17. In response to Central Government's directive for Local Authorities to reduce energy usage, many other Councils have received funding from the Local Highways Maintenance Challenge Fund to enable them to undertake LED lighting replacement schemes. However, it is difficult to make like-for-like comparisons in terms of both costs and savings due to the varied geographical area and make up of Local Authorities as well as the variation of fittings replaced. For example, some schemes replace both the lamps and all the lighting columns, as well as lighting for bollards and street signs, whereas Middlesbrough has only replaced the lanterns.
18. Since Phase 1 of the Scheme has been implemented, a total of eleven One Stop requests have been received relating to dark areas, lights on during the day, positioning of the new lights, concerns of anti-social behaviour and one faulty lamp unit. In response, Officers have carried out site visits and assessments as required and made alterations where appropriate. To date, there has been 100% satisfaction with the remedial action taken.
19. No issues have been reported in terms of community safety to date. However, if there is any correlation between an increase in crime in areas where LEDs have been fitted in future, the Council's Community Protection Service can be contacted for support and action as required.
20. Phase 2 of the LED replacement programme has been costed at £3.924 million to replace 8,692 lamp units. Discussions are underway regarding financing Phase 2 of the project. One possible source of funding could be the Tees Valley Combined Authority.
21. The type of fittings used on Phase 1 are predominantly 20 and 22 LEDs, which replace the 70 watt lamps and cost £350 per unit. This provides approximately 50 watt reduction in energy use per unit to achieve the target to reduce the energy as much as possible. Phase 2 of the project will replace the rest of the stock, the majority of which includes the larger units costing approximately £750 each, although there are also still some smaller units to replace.
22. Newer technology has also improved the LEDs efficiency capabilities however the newer models are more expensive to purchase. The new LEDs have a 10 year guarantee and are predicted to have a 20 year life span.
23. The total projected on-going annual saving once Phase 2 is completed is £357,000. The minimum delivery period for Phase 2 is twelve months.

## CONCLUSIONS

The scrutiny panel reached the following conclusions in respect of its investigation:

24. **TERM OF REFERENCE A – To consider progress made to date with Middlesbrough’s LED replacement lighting scheme.**

24.1 Phase 1 of Middlesbrough Council’s LED replacement lighting scheme has been completed and delivered within budget. 13,251 existing lamp units have been replaced with LEDs over a twenty four month period. This equates to approximately 70% of all light fittings provided by Middlesbrough Council. Phase 2 of the LED replacement programme has been costed at £3.924 million to replace 8,692 lamp units. Funding for Phase 2 of the programme is not yet in place.

25. **TERM OF REFERENCE B – To examine the existing budget provision and actual and projected savings.**

25.1 The budget for required for Phase 1 of the scheme was £5 million, which was allocated as follows: £4.1m from capital receipts and £0.9m from prudential borrowing. There are no individual loans taken out by the Council for specific schemes or interest costs allocated to capital schemes. Instead, the Capital programme operates on a holistic basis through a combination of external borrowing and use of internal reserves in lieu of external borrowing.

25.2 Based on current energy prices and taking into account inflation, £438,687 ongoing annual savings have been achieved including carbon tax and maintenance savings. The savings that the Council is making from the replacement programme are solely from the reduction in costs that the Council incurs. There are no direct interest costs apportioned to the LED scheme due to the holistic nature of the borrowing in place.

25.3 The total annual on-going savings are slightly lower than the targeted savings (£438,687 instead of £445,532). Several factors have impacted on reducing the levels of savings realised as follows:

- Changes to level and scope of funding due to a number of iterations of bid submissions. This altered the savings targets.
- Delay in approving the funding bid resulted in delay in instructing delivery partner to proceed. A 3 month turnaround on receiving stock further delayed progress.
- Loss of key staff and knowledge/assumptions on calculations/anticipated savings to be made.
- Outdated calculation variables (based on data from before the funding was approved).
- Changes in government Carbon Tax rates (increased rate means less savings to be made).
- Estimated energy consumption levels used for CRC (Carbon Reduction Commitment) calculation submission as opposed to actual data.

25.4 In terms of energy, the annual saving is 3,203,245 KW/h. Without the replacement scheme the anticipated energy bill would have risen by £64,570, based on

consumption in 2014/2015. The total projected on-going annual saving once Phase 2 is completed is £357,000.

25.5 For Phase 1 of the scheme, the cheapest fittings that provided the best return on investment were purchased. Due to improved technology, more efficient units are now available and will be purchased for Phase 2. However the newer fittings are more expensive than those used in Phase 1.

25.6 Phase 2 of the project will replace the rest of the stock, the majority of which includes larger units costing approximately £750 each as well as some of the smaller units costing £350.

25.7 The original scheme was costed at £7.5 million and was split into two phases due to the unavailability of the total funding required. Phase 1 of the scheme has been implemented at a total cost of £5 million and Phase 2 of the scheme is estimated to cost £3.924 million, bringing the revised total for the whole scheme to approximately £9 million.

26. **TERM OF REFERENCE C - To assess the potential impact of the new lighting with regard to community safety.**

26.1 Whilst there is no legal obligation for highways authorities to provide street lighting, benefits can include reducing traffic collisions, increasing road safety and reducing the fear of crime and actual crime. No issues have been reported to Middlesbrough Council in terms of community safety to date.

## **RECOMMENDATIONS**

27. The Economic Development and Infrastructure Scrutiny Panel recommends to the Executive:

- a) That, whilst the Panel acknowledged the various factors which contributed to the increase of £2.5 million on the original costing of the scheme, where possible, any similar projects should be fully funded at the outset to ensure the maximum savings possible are achieved by the Council.
- b) That, prior to submission of any bid for funding for Phase 2 of the LED Lighting Scheme, Panel should be given the opportunity to examine the detailed requirements in terms of fittings, coverage and costs of the Scheme to ensure that the Council is receiving value for money from Phase 2.

## **ACKNOWLEDGEMENTS**

28. The Economic Development and Infrastructure Scrutiny Panel would like to thank the following for their assistance with its work:

- David Carter, Head of Transport and Infrastructure.
- Chris Orr, Infrastructure Programme Manager.
- Ian McConville, Maintenance and Operations Manager.
- Rob Warner, Contract Manager, Galliford Try.

## **BACKGROUND PAPERS**

29. The following sources were consulted or referred to in preparing this report:
- Minutes of the Economic Regeneration and Transport Scrutiny Panel meetings held on 13 September and 13 December 2017.
  - Additional written information provided by Chris Orr, Infrastructure Programme Manager, on 9 and 13 October 2017.
  - Research in relation to unit costs and fittings provided by Councillor R Arundale, on 10 January 2018.

### **COUNCILLOR M STOREY - CHAIR OF ECONOMIC DEVELOPMENT AND INFRASTRUCTURE SCRUTINY PANEL**

The membership of the scrutiny panel is as follows: Councillors M Storey, (Chair), T Higgins, (Vice-Chair), R Arundale, D J Branson, N Hussain, L Lewis, L McGloin, M Saunders and M Walters

**Contact Officer:**

Susan Lightwing  
Democratic Services  
Telephone: 01642 729712 (direct line)  
Email: [susan\\_lightwing@middlesbrough.gov.uk](mailto:susan_lightwing@middlesbrough.gov.uk)